

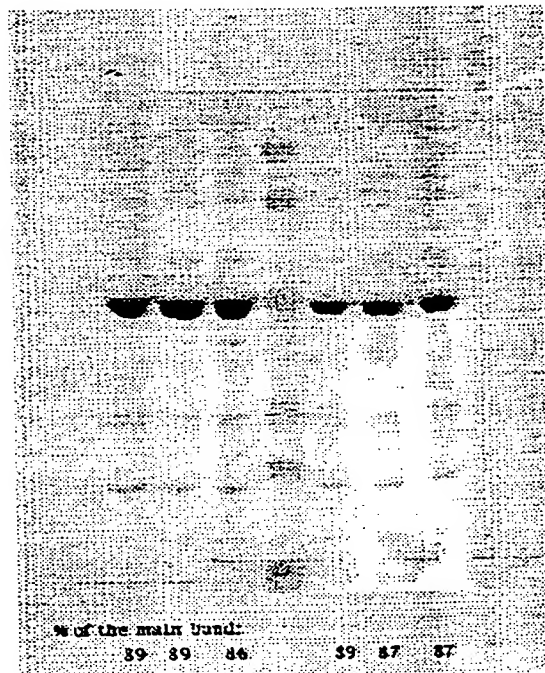
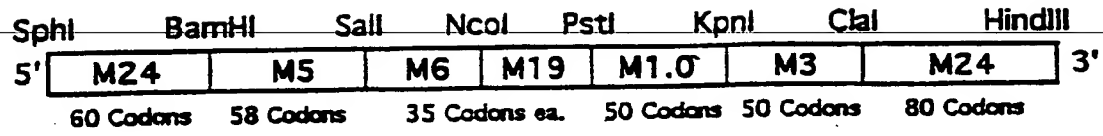
[illegible]

FIGURE 3

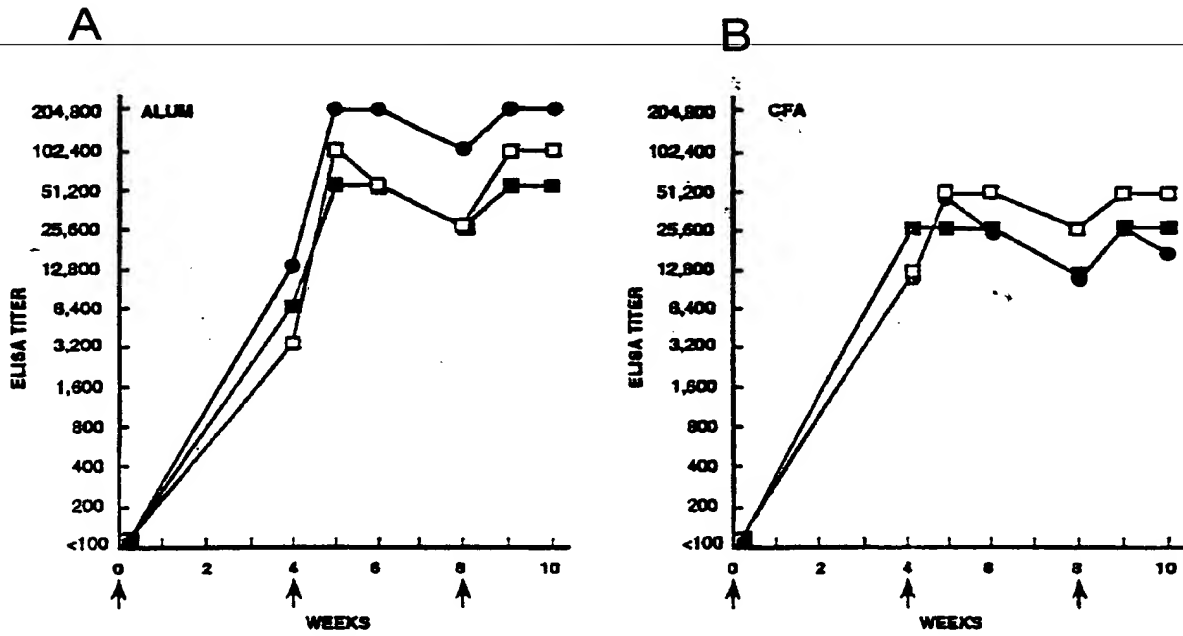
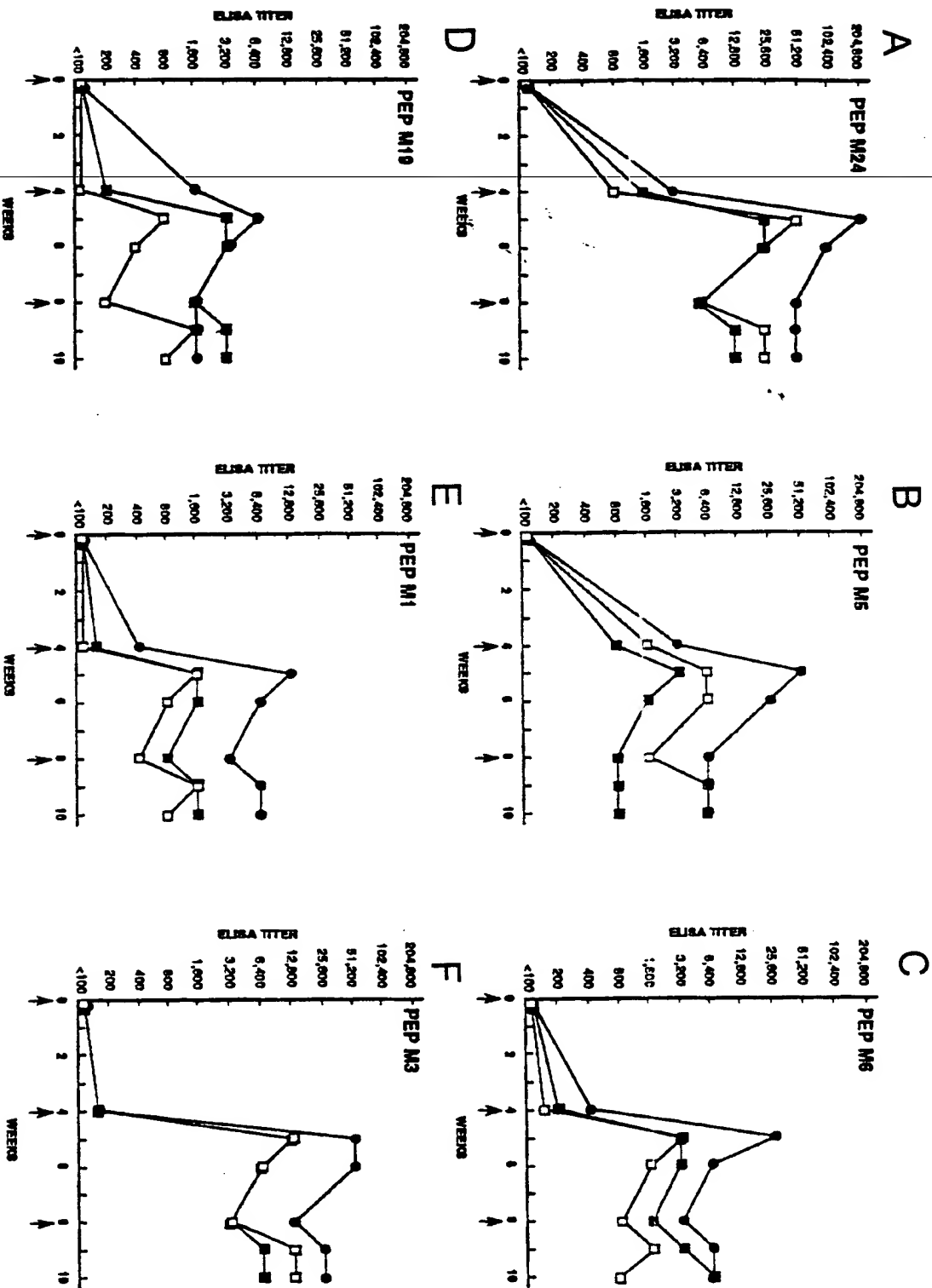


FIGURE 4



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FIGURE 5

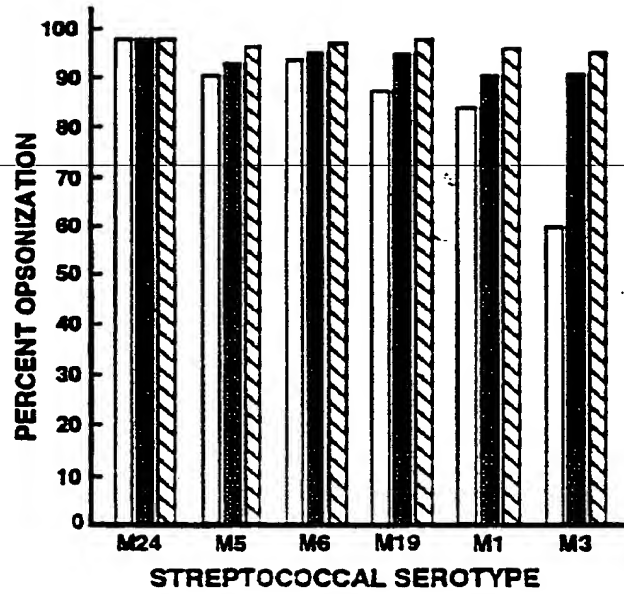
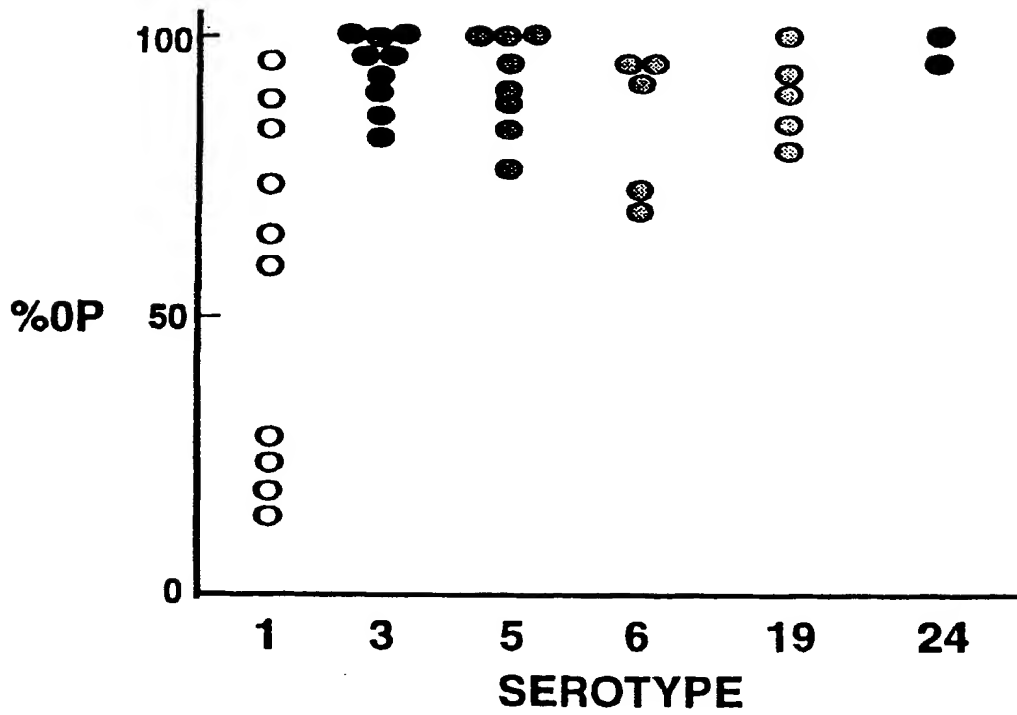


FIGURE 6



# FIGURE 7A

## HEXAVALENT M. PROTEIN VACCINE SEQUENCE

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      10      20      30      40      50      60      70
      *      *      *      *      *      *      *
GCA TGC ATG GTC GCG ACT AGG TCT CAG ACA GAT ACT CTG GAA AAA GTA CAA GAA CGT OCT GAC AAG TTT GAG ATA
Ala Cys Met Val Ala Thr Arg Ser Gln Thr Asp Thr Leu Glu Lys Val Gln Glu Arg Ala Asp Lys Phe Glu Ile
-SphI- M24----->

      80      90      100      110      120      130      140      150
      *      *      *      *      *      *      *      *
GAA AAC AAT ACG TTA AAA CTT AAG AAT AGT GAC TTA AGT TTT AAT AAT AAA GCG TTA AAA GAT CAT AAT GAT GAG
Glu Asn Asn Thr Leu Lys Leu Lys Asn Ser Asp Leu Ser Phe Asn Asn Lys Ala Leu Lys Asp His Asn Asp Glu

      160      170      180      190      200      210      220
      *      *      *      *      *      *      *
TTA ACT GAA GAG TTG AGT AAT GCT AAA GAG AAA CTA CGT GGA TCC GCC GTG ACT AGG CGT ACA ATA AAT GAC CCG
Leu Thr Glu Glu Leu Ser Asn Ala Lys Glu Lys Leu Arg Gly Ser Ala Val Thr Arg Gly Thr Ile Asn Asp Pro
-BamHI- M5----->

      230      240      250      260      270      280      290      300
      *      *      *      *      *      *      *      *
CAA AGA GCA AAA GAA GCT CTT GAC AAG TAT GAG CTA GAA AAC CAT GAC TTA AAA ACT AAG AAT GAA GGG TTA AAA
Gln Arg Ala Lys Glu Ala Leu Asp Lys Tyr Glu Leu Glu Asn His Asp Leu Lys Thr Lys Asn Glu Gly Leu Lys

      310      320      330      340      350      360      370
      *      *      *      *      *      *      *
ACT GAG AAT GAA GGG TTA AAA ACT GAG AAT GAA GGG TTA AAA ACT GAG AAT GAA GGG TTA AAA ACT GAG GTC GAC
Thr Glu Asn Glu Gly Leu Lys Thr Glu Asn Glu Gly Leu Lys Thr Glu Asn Glu Gly Leu Lys Thr Glu Val Asp
-SalI-

      380      390      400      410      420      430      440      450
      *      *      *      *      *      *      *      *
AGA GTG TTT OCT AGG GGG ACG GTA GAA AAC CCG GAC AAA GCA CCA GAA CTT CTT AAC AAG TAT GAC GTA GAG AAC
Arg Val Phe Pro Arg Gly Thr Val Glu Asn Pro Asp Lys Ala Arg Glu Leu Leu Asn Lys Tyr Asp Val Glu Asn
M6----->

      460      470      480      490      500      510      520
      *      *      *      *      *      *      *
TCT ATG TTA CAA GCT AAT AAT GAC AAG TTA CCA TGG AGA GTG CGT TAT ACT AGG CAT ACG CCA GAA GAT AAG CTA
Ser Met Leu Gln Ala Asn Asn Asp Lys Leu Pro Trp Arg Val Arg Tyr Thr Arg His Thr Pro Glu Asp Lys Leu
-NcoI- M19----->

      530      540      550      560      570      580      590      600
      *      *      *      *      *      *      *      *
AAA AAA ATT ATT GAC GAT CTT GAC GCA AAA GAA CAT GAA TTA CAA CAA CAG AAT GAG AAG TTA TCT CTG CAG AAC
Lys Lys Ile Ile Asp Asp Leu Asp Ala-Lys Glu His Glu Leu Gln Gln Gln Asn Glu Lys Leu Ser Leu Gln Asn
-PstI- M1.0

      610      620      630      640      650      660      670
      *      *      *      *      *      *      *
GGT GAT GGT AAT OCT AGG GAA GTT ATA GAA GAT CTT GCA GCA AAC AAT CCC GCA ATA CAA AAT ATA CGT TTA CGT
Gly Asp Gly Asn Pro Arg Glu Val Ile Glu Asp Leu Ala Ala Asn Asn Pro Ala Ile Gln Asn Ile Arg Leu Arg
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Sequence of Hexavalent M. Protein Vaccine

$\lim_{n \rightarrow \infty} \frac{1}{n} \sum_{i=1}^n \frac{1}{i} \log \frac{1}{i} = 0$

680 690 700 710 720 730 740 750  
CAC GAA AAC AAG GAC TTA AAA GCG AGA TTA GAG AAT GCA ATG GAA GTT GCA GGA AGA CAT TTT AAG AGA GCT GGT  
His Glu Asn Lys Asp Leu Lys Ala Arg Leu Glu Asn Ala Met Glu Val Ala Gly Arg Asp Phe Lys Arg Ala Gly  
KpnI

760 770 780 790 800 810 820  
ACC TTG TTA GAT CAG GTT ACA CAA TTA TAT ACT AAA CAT AAT AGT AAT TAC CAA CAA TAT AAT GCA CAA GCT GGC  
Thr Leu Leu Asp Gln Val Thr Gln Leu Tyr Thr Lys His Asn Ser Asn Tyr Gln Gln Tyr Asn Ala Gln Ala Gly  
--- M3----->

830 840 850 860 870 880 890 900  
AGA CTT GAC CTG AGA CAA AAG GCT GAA TAA CTA AAA GGC CTT AAT GAT TGG GCT GAG AGG CTG TTA CAA GAG TTA  
Arg Leu Asp Leu Arg Gln Lys Ala Glu Tyr Leu Lys Gly Leu Asn Asp Trp Ala Glu Arg Leu Leu Gln Glu Leu

910 920 930 940 950 960 970  
AAT ATC GAT GTC GCG ACT AGG TCT CAG ACA GAT ACT CTG GAA AAA GTA CAA GAA CGT GCT GAC AAG TTT GAG ATA  
Asn Ile Asp Val Ala Thr Arg Ser Gln Thr Asp Thr Leu Glu Lys Val Gln Glu Arg Ala Asp Lys Phe Glu Ile  
-Clai- M24----->

980 990 1000 1010 1020 1030 1040 1050  
GAA AAC AAT ACG TTA AAA CTT AAG AAT AGT GAC TTA AGT TTT AAT AAT AAA GCG TTA AAA GAT CAT AAT GAT GAG  
Glu Asn Asn Thr Leu Lys Leu Lys Asn Ser Asp Leu Ser Phe Asn Asn Lys Ala Leu Lys Asp His Asn Asp Glu

1060 1070 1080 1090 1100 1110 1120  
TTA ACT GAA GAG TTG AGT AAT GCT AAA GAG AAA CTA CGT AAA AAT GAT AAA TCA CTA TCT GAA AAA GCT AGT AAA  
Leu Thr Glu Glu Leu Ser Asn Ala Lys Glu Lys Leu Arg Lys Asn Asp Lys Ser Leu Ser Glu Lys Ala Ser Lys

1130 1140 1150  
ATT CAA GAA TTA GAG GCA CGT AAG TAA AAG CTT  
Ile Gln Glu Leu Glu Ala Arg Lys \*\*\* Lys Leu  
Stop HindIII